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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Amir Michaeli

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12/08/2008

THE LAW OFFICE OF KIRK D. WILLIAMS

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DENVER, CO 80239-0425

EXAMINER

ZHEN, LI B

ART UNIT

PAPER NUMBER

2194

MAIL DATE

DELIVERY MODE

12/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/845,606	Applicant(s) MICHAELI ET AL.	
	Examiner LI B. ZHEN	Art Unit 2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 13-15, 23, 29-43 and 48-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23, 39 and 40 is/are allowed.
- 6) ☒ Claim(s) 1-3, 13-15, 29-31, 33-38, 41-43 and 48-51 is/are rejected.
- 7) ☒ Claim(s) 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 3, 13 – 15, 23, 29 – 43 and 48 – 51 are presented for examination.
2. In view of the Appeal Brief filed on 09/19/2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

Allowable Subject Matter

3. Claims 23, 39 and 40 are allowed.
4. Claim 32 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

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5. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1 – 3, 13 – 15, 29 – 31, 33 – 38, 41 – 43 and 48 – 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,262,986 to Oba et al. [hereinafter Oba] in view of U.S. Patent Application Publication No. 20010033581 to Kawarai et al. [hereinafter Kawarai].**

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9. As to claim 1, Oba teaches a line card of a router including a queue [col. 4, line 65 – col. 5, line 13], the queue comprising:

a distributor [packet input unit 15; col. 4, line 65 – col. 5, line 14];

one or more storage elements for storing a data structure [col. 4, line 65 – col. 5, line 13], the data structure including a plurality of sub-data structures [plurality of packet queues 12, 13, 14; col. 4, line 65 – col. 5, line 14] with each of said sub-data structures capable of storing a plurality of stored items of a plurality of items [entering packets into the packet queues 12, 13, 14; col. 4, line 65 – col. 5, line 14]; and

a receiver [packet output unit 17; col. 4, line 65 – col. 5, line 14];

wherein the distributor is configured to distribute the plurality of items to be added to the data structure [packet input unit 15 then enters the packet inputted from the packet input line 19 into an appropriate one of the packet queues 12, 13, 14; col. 5, lines 15 – 26] among the plurality of sub-data structures defined among the plurality of sub-data structures and including each of the plurality of sub-data structures [col. 5, lines 15 – 26]; and the receiver is configured to receive the items from the plurality of sub-data structures in a sequence order [scheduling information for specifying an order to read out the packets stored in the packet queues 12, 13, 14; col. 5, lines 35 – 50] such that the plurality of items are received by the receiver from the data structure in a first-in the data structure, first-out the data structure order [FIFO configuration; col. 13, lines 12 – 26]. Oba does not specifically disclose distributing a plurality of data items in a predetermined sequence order and receiving the items in the predetermined sequence.

However, Kawai teaches distribute a plurality of items to be added to the data structure among the plurality of sub-data structures in a predetermined sequence order defined among the plurality of sub-data structures and including each of the plurality of sub-data structures [When the arrived packet in the input buffer section is of the minimum bandwidth guaranteed class, this packet is queued; paragraph 0114]; and receive the items from the plurality of sub-data structures in the sequence order [select packets according to the arrival order when packets are selected according to numbers read out from the FIFO; paragraph 0217] such that the plurality of pieces of information are received by the receiver from the particular one of the plurality of data structures in a first-in the particular one of the plurality of data structures, first-out the particular one of the plurality of data structures order [a time stamp that shows the arrival order is given to the data stored in each queue of the QoS class selecting sections 224 and 226, and the packets are selected in this order; paragraph 0216].

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the invention of Oba to incorporate the features of Kawai. One of ordinary skill in the art would have been motivated to make the combination because this solves the problem of unfair delay time due to a deviation in the traffic between QoS classes [paragraphs 0215 and 0216 of Kawai].

10. As to claim 13, Oba as modified teaches a line card or a router including a queue [col. 4, line 65 – col. 5, line 13 of Oba], the queue comprising:

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one or more storage elements for storing a plurality of data structures [col. 4, line 65 – col. 5, line 13 of Oba], each of the plurality of data structures including a plurality of sub-data structures [plurality of packet queues 12, 13, 14; col. 4, line 65 – col. 5, line 14 of Oba] capable of storing a plurality of stored pieces of a plurality of pieces of information [entering packets into the packet queues 12, 13, 14; col. 4, line 65 – col. 5, line 14 of Oba];

a storage selector configured to select among the plurality of data structures for a particular piece of the plurality of pieces of information [selector 212; paragraph 0204 of Kawai];

a distributor [packet input unit 15; col. 4, line 65 – col. 5, line 14 of Oba]; and

a receiver [packet output unit 17; col. 4, line 65 – col. 5, line 14 of Oba];

wherein the distributor is configured to distribute each of the plurality of pieces of the information to be added [packet input unit 15 then enters the packet inputted from the packet input line 19 into an appropriate one of the packet queues 12, 13, 14; col. 5, lines 15 – 26 of Oba] to a particular one of the plurality of data structures across the plurality of sub-data structures belonging to the particular one of the plurality of data structures in a predetermined sequence order [paragraph 0114 of Kawai] defined across the plurality of sub-data structures and including each of the plurality of sub-data structures [col. 4, line 65 – col. 5, line 14 of Oba]; and the receiver is configured to receive the items from the plurality of sub-data structures in the sequence order [paragraph 0217 of Kawai] such that the plurality of pieces of information are received by the receiver from the particular one of the plurality of data structures in a first-in the

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particular one of the plurality of data structures, first-out the particular one of the plurality of data structures order [paragraph 0216 of Kowarai].

11. As to claim 33, Oba as modified teaches a queue for storing items of a stream of information [paragraph 0100 of Kowarai] with said items received in a particular order [paragraph 0114 of Kowarai], the queue being implemented by a single apparatus [col. 4, line 65 – col. 5, line 13 of Oba], the queue comprising:

a plurality of sub-queues [col. 4, line 65 – col. 5, line 14 of Oba], each of the plurality of sub-queues capable of storing a plurality of items [col. 4, line 65 – col. 5, line 14 of Oba];

an enqueue distributor configured to receive said items of the stream of information in said particular order [col. 4, line 65 – col. 5, line 14 of Oba], and configured to distribute said items to the plurality of sub-queues in a predetermined sequence order [paragraph 0114 of Kowarai] among the plurality of sub-queues such that each of said items are only stored in a single one of the plurality of sub-queues [col. 4, line 65 – col. 5, line 14 of Oba]; and

a dequeue receiver [col. 4, line 65 – col. 5, line 14 of Oba] configured to only receive said items of the stream of information from the plurality of queues in the predetermined sequence order [paragraph 0217 of Kowarai] and to forward said items in said particular order [paragraph 0216 of Kowarai].

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12. As to claim 48, Oba as modified teaches a queue for storing items of a stream of information [paragraph 0100 of Kawai] with said items received in a particular order [paragraph 0114 of Kawai], the queue being implemented by a single apparatus [col. 4, line 65 – col. 5, line 13 of Oba], the queue comprising:

a plurality of sub-queues [col. 4, line 65 – col. 5, line 14 of Oba], each of the plurality of sub-queues capable of storing a plurality of items [col. 4, line 65 – col. 5, line 14 of Oba];

means for receiving said items of the stream of information in said particular order [col. 4, line 65 – col. 5, line 14 of Oba], and for distributing said items to the plurality of sub-queues in a predetermined sequence order [paragraph 0114 of Kawai] among the plurality of sub-queues such that each of said items are only stored in a single one of the plurality of sub-queues, wherein items distributed to a sub-queue are stored in the sub-queue [col. 4, line 65 – col. 5, line 14 of Oba]; and

means for retrieving [col. 4, line 65 – col. 5, line 14 of Oba] said items of the stream of information from the plurality of queues in the predetermined sequence order [paragraph 0217 of Kawai] and for forwarding said items in said particular order [paragraph 0216 of Kawai].

13. As to claim 2, Oba teaches each of the sub-data structures includes a linked-list data structure configured for storing items of the plurality of stored items [col. 7, lines 60 – 65].

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14. As to claim 3, Oba teaches storage for storing a head and a tail of the linked list data structure of each of the plurality of sub-data structures [col. 13, lines 25 – 30].

15. As to claim 14, Oba teaches each of the sub-data structures includes a linked-list data structure configured for storing pieces of information of the plurality of pieces of information [col. 7, lines 60 – 65].

16. As to claim 15, Oba teaches a storage for storing a head and a tail of the linked list data structure of each of the plurality of sub-data structures [col. 13, lines 25 – 30].

17. As to claim 29, Oba as modified teaches the sequence order is a round robin order among the plurality of sub-data structures [paragraph 0164 of Kawai].

18. As to claim 30, Oba teaches the distributor includes a counter configured to identify the sequence order [col. 11, lines 26 – 40].

19. As to claim 31, Oba as modified teaches the sequence order is a round robin order among the plurality of sub-data structures [paragraph 0164 of Kawai].

20. As to claim 34, Oba teaches said items correspond to packets [col. 7, lines 42 – 49].

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21. As to claim 35, Oba teaches the distributor is configured to distribute the plurality of items among the plurality of sub-data structures without regard to the content of items of the plurality of items [col. 20, lines 39 – 50].

22. As to claim 36, Oba teaches said items correspond to packets [col. 7, lines 42 – 49].

23. As to claim 37, Oba teaches the distributor is configured to said distribute the plurality of pieces of the information among the plurality of sub-data structures without regard to the content of piece of the plurality of pieces of the information [col. 20, lines 39 – 50].

24. As to claim 38, Oba as modified teaches said pieces of information correspond to packets [col. 7, lines 42 – 49].

25. As to claim 41, Oba as modified teaches the predetermined sequence order is a round robin order [paragraph 0164 of Kawai] among the plurality of sub-queues [paragraph 0164 of Kawai].

26. As to claim 42, Oba teaches the enqueue distributor includes a counter for use in identifying the predetermined sequence order [col. 11, lines 26 – 40].

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27. As to claim 43, Oba as modified teaches the enqueue distributor is configured to said distribute the plurality of items among the plurality of sub-queues [col. 4, line 65 – col. 5, line 14 of Oba] without regard to the content of items of the plurality of items [col. 20, lines 39 – 50 of Oba].

28. As to claim 49, Oba as modified teaches the items correspond to packets [col. 7, lines 42 – 49 of Oba].

29. As to claim 50, Oba as modified teaches the sequence order among the plurality of sub-queues [col. 20, lines 39 – 50 of Oba] is predetermined and independent of the content of said items of the stream of information [paragraph 0164 of Kawai].

30. As to claim 51, Oba as modified teaches the predetermined order is a round robin [paragraph 0164 of Kawai] among the plurality of sub-queues [col. 4, line 65 – col. 5, line 14 of Oba].

CONTACT INFORMATION

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (571) 272-3768. The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571)272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Li B. Zhen/
Primary Examiner, Art Unit 2194

Li B. Zhen
Primary Examiner
Art Unit 2194